Observations on Some Maritime Forest Spiders of Four South Carolina Barrier Islands

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ABSTRACT.— Quantitative observations on the seasonal abundance of 22 species of araneid orb weavers and general observations on five non-orb weaver species were made on four South Carolina barrier islands. Data collected along transects revealed that 5 of 22 orb weaver species matured in spring, 8 in early summer, 7 in late summer, and 2 in autumn. The greatest number of mature individuals of all orb weaver species was found in early summer, but the greatest number of species matured in late summer. *Araneus bicentenarius*, thought to be rare, was found on all four islands.

INTRODUCTION

The spider fauna of the outer coastal plain of the Carolinas is relatively unknown. Barnes (1953) and Barnes and Barnes (1954) studied the ecology and species composition of spider communities in non-forested maritime communities near Beaufort, North Carolina but did not deal with the maritime forest. Berry (1971) discussed the seasonal distribution of many of the species found on barrier islands, but his field work was done in the Piedmont of North Carolina, an area climatically different from the barrier islands of South Carolina.

Maritime forest is the dominant vegetation cover type on the barrier islands of South Carolina, where live oak, *Quercus virginiana;* laurel oak, *Quercus laurifolia;* palmetto, *Sabal palmetto;* southern magnolia, *Magnolia grandiflora;* and various pines (notably *Pinus taeda* and *Pinus elliottii*) dominate the canopy. Red bay, *Persea borbonia;* yaupon holly, *Ilex vomitoria;* American holly, *Ilex opaca;* and palmetto are the most commonly encountered species in the understory and shrub layers. The canopy and understory are extremely dense, with nearly 100 percent coverage; the shrub layer's average coverage, on the other hand, is low, varying from 10 to 50 percent. The coverage in the herbaceous layer is usually less than 10 percent.

From February to November 1979, monthly observations and collections were made along transects on each of four South Carolina barrier islands—Bulls, Kiawah, Capers, and Hunting islands. These transects, which averaged approximately one kilometer long, were walked at least once a month between the hours of 0800 and 1700. All orb webs and retreats between ground level and 2.7 meters high were checked for adult spiders. The total number of individuals of each sex was recorded.

The data here are based primarily on field identification. Because of the large number of spiders handled, only taxonomically difficult species and representative specimens of common species were collected. Voucher specimens are in the author's personal collection. General notes were taken on the presence of non-araneid orb weavers and non-orb weavers.

RESULTS AND DISCUSSION

Twenty-two species of araneids were found on the four islands. Table 1 lists the number of adults recorded per transect in winter (February), spring (March and April), early summer (May and June), late summer (July and August), and autumn (September and October). No perceptible differences in population or species number were found among the four islands. Most species, however, did exhibit some degree of seasonality, as seen in Table 1.

Of the 22 araneid species, the genus *Araneus* was represented by 4 species, *Mangora* by 3, and *Neoscona, Micrathena,* and *Argiope* by 2 species each. As seen in Table 1, only *Araneus pegnia* was found to be in the adult stage in winter. *Araneus miniatus,* another small *Araneus,* was observed in the spring, along with additional *A. pegnia. Araneus pratensis,* the third small *Araneus* found on the islands, occurred in forest openings only in late summer.

The spring dominants were *Mangora placida* and *Acanthepeira* spp. (Because of the difficulties of field identification of the large number of *Acanthepeira* individuals encountered, these spiders were identified only to genus.) *Mangora maculata* and *M. gibberosa* did not mature until early summer, confirming the observations of Berry (1971). The third most frequent species found mature in the spring was *Araneus bicentenarius.* Levi (1971) thought this species rare in North America, but its giant webs were seen frequently from early March through May on the four islands studied. One individual seen in March was over 20 mm long, possibly having overwintered as an adult (however, no subadults were seen on the transects in February). The retreat of *A. bicentenarius* was usually made in Spanish moss, *Tillandsia usneoides,* on the four study islands.

In early summer, *Acanthepeira* individuals became the dominant adults, reaching a peak in early June. *Neoscona arabesca* matured in early June and continued to be common into October. *Leucage venusta* individuals were common from late May to July. *Argiope trifasciata* peaked in abundance in late summer in shrubby areas. In late July, females of *Nephila clavipes* were undergoing their final molt with males beginning to appear in their webs. Mating frequently took place during the final molt while the female hung defenseless in her web (see Robinson and Robinson 1973, 1976). *Nephila,* however, did not become the most abundant spider until August. In late summer and autumn, *Neoscona domiciliorum* began to appear in the wetter areas of the maritime

Table 1. Frequency (number of adults per transect) of orb weavers on four South Carolina barrier islands.

Species	Feb.	Mar.-Apr.	May-June	July-Aug.	Sept.-Oct.
Araneus pegnia	.3	.5			
Araneus miniatus		.5			
Araneus bicentenarius		3.5	3.0		
Cyclosa sp.		.2	.5		
Acanthepeira spp.		7.1	20.5	2.0	
Mangora placida		7.9		.2	
Eustala anastera		.5		.2	
Leucage venusta		.8	5.5	4.7	1.0
Mangora maculata			1.0		
Mecynogea lemniscata			.5		
Micrathena gracilis			1.0	.7	
Micrathena sagittata			.5	1.2	
Mangora gibberosa			.5	.3	
Neoscona arabesca			18.5	6.5	2.0
Argiope trifasciata			2.0	4.5	2.0
Araneus pratensis				.3	
Gasteracantha cancriformis				.7	
Gea heptagon				.2	
Acacesia hamata				.2	
Nephila clavipes				13.7	31.5
Argiope aurantia				.2	.1
Neoscona domiciliorum				.3	2.0
Totals	.3	21.2	57.5	31.4	43.0

forests. By this time, *Nephila clavipes* was the overwhelmingly dominant species (see Table 1).

The spiny-bodied orb weavers, *Micrathena gracilis, Micrathena sagittata,* and *Gasteracantha cancriformis,* were not as common in the maritime forest as they are on the adjacent mainland. It must be pointed out, however, that *G. cancriformis* was more common than Table 1 indicates, being frequently seen in its web above 2.7 meters (spiders in webs more than 2.7 meters above the ground were not counted due to the difficulty of collecting and identifying these individuals).

Nephila clavipes, Acanthepeira spp., and *Neoscona arabesca* were the most numerous of the 22 orb weaver species. More orb weaver individuals matured in early summer; however, more species of orb weavers

matured in late summer (see Table 1). The autumn totals in Table 1 are artificially high because of the large number of *Nephila clavipes,* a visually and numerically dominant species.

General observations on non-orb weavers indicate that *Latrodectus mactans* is common under debris in dunes dominated by sea oats, *Uniola paniculata.* Large males (7 mm body length) of *L. mactans* were found in the maritime forest. Three species of the inquilinous *Argyrodes* were found on the four islands: *Argyrodes fictilium* (Hentz) [=*Rhomphaea lacerta* (Walckenaer)], *Argyrodes furcatus* (O.P.-Cambridge), and *Argyrodes nephilae* Taczanowski. *Argyrodes nephilae* was found in the webs of *Acanthepeira* spp. and *Tidarren sisyphoides,* as well as those of *Nephila clavipes.*

Carico (1973) noted that the genus *Dolomedes* was absent from "most islands off the coast of the southeastern United States," salt water being a barrier to their dispersal. However, during my study *Dolomedes triton* (Walckenaer) was found in a freshwater wetland less than 50 m from the beach front.

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